

Learning Together: Scientists & Teachers as Allies in Science Education Reform

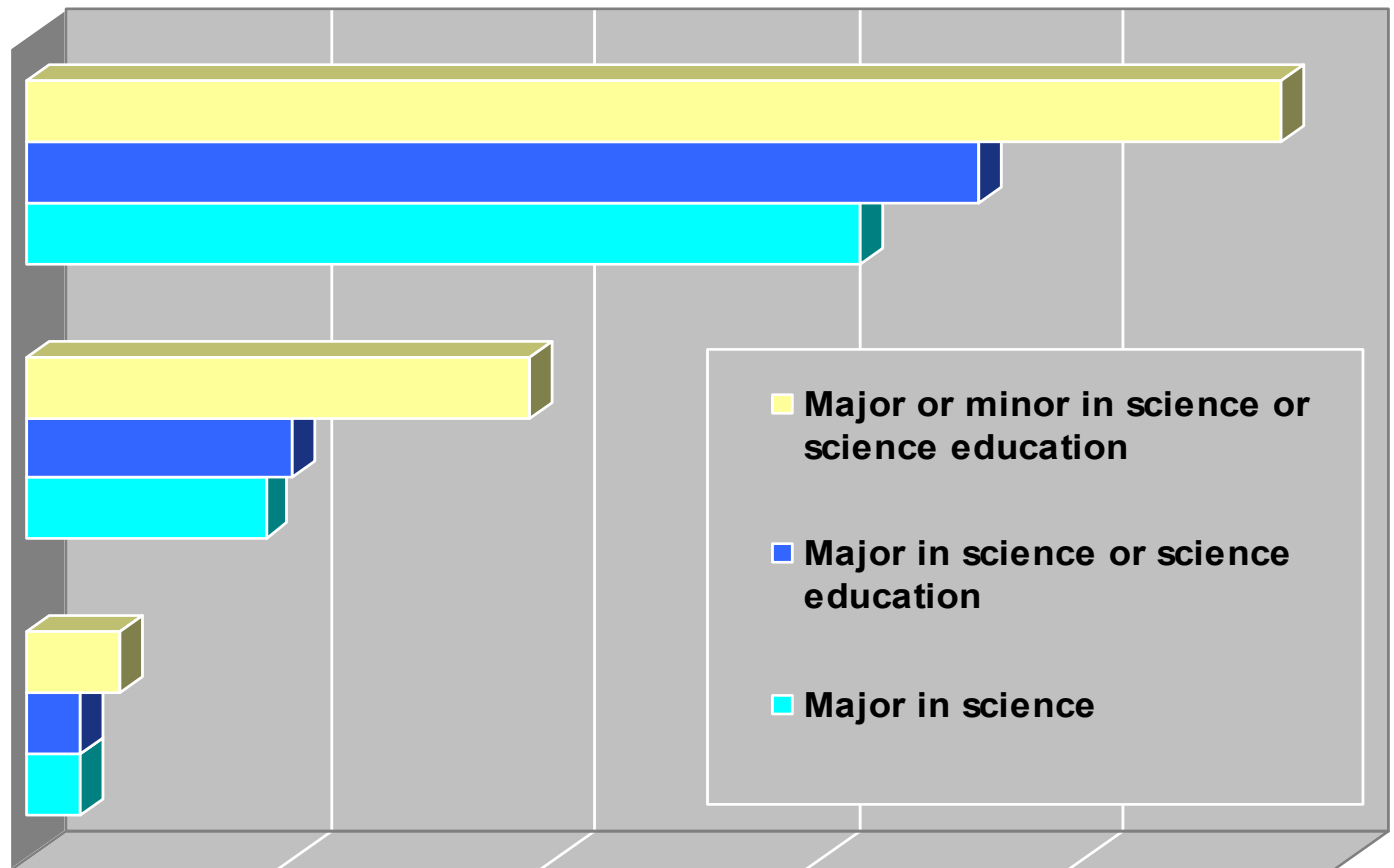
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Preparation of Science Teachers



Scientist-Teacher Partnerships



- **Why** form a partnership?
- **With whom** can a scientist partner?
- **How** can I use my scientific knowledge understanding, and experience to contribute to K-12 science education improvement?
- **What** types of activities might be involved?
- How much **time** do I need to commit?
- **Where** might a partnership take place?

Why form a scientist-teacher partnership?

- Why?

- Who?

- How?

- What?

- When?

- Where?

- **Improve teacher science content knowledge**
- **Increase teacher confidence in teaching science**
- **Improve student learning**
- **Interest students in science**

Teachers cannot be faulted for failing to promote science education if they have not been exposed to science themselves.

Students are more inspired by science in which they are actively engaged.

Identified Teacher Needs to Improve Science Teaching

- Implement national and state science content standards
- Improve science content knowledge
- Develop skills in teaching inquiry-based, hands-on lessons
- Examples of inquiry-based, hands-on science lessons
- How to conduct safe field trips and where to take students



- Why?

- Who?

- How?

- What?

- Time?

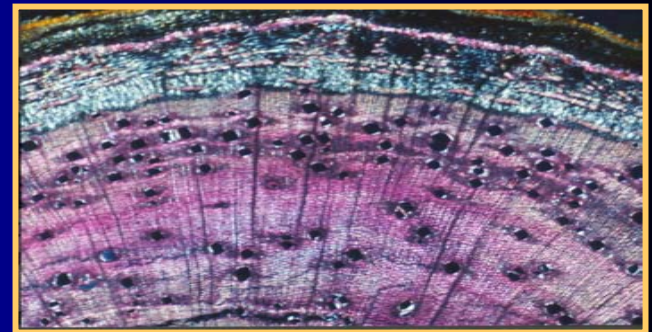
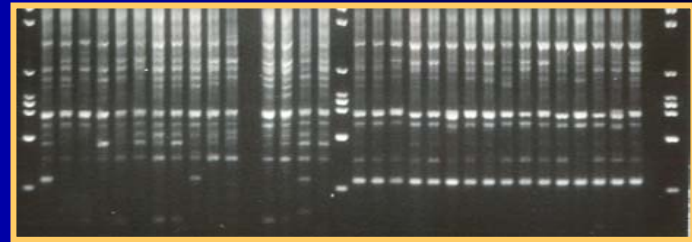
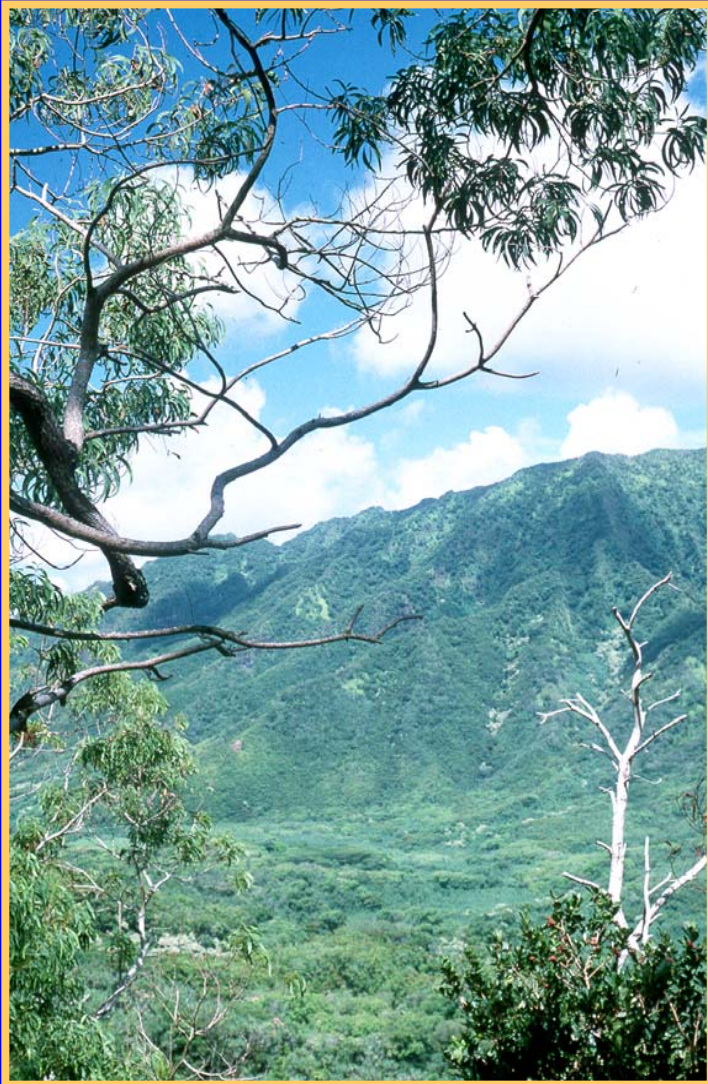
- Where?



- Why?
- Who?
- **How?**
- What?
- Time?
- Where?

**How can I use my
scientific knowledge,
understanding, and
experience
to contribute to
K-12 science
education
improvement?**

Diversity of *Acacia koa* Forest



Koa Research

Biodiversity

Sampling methods

Native species

Alien species

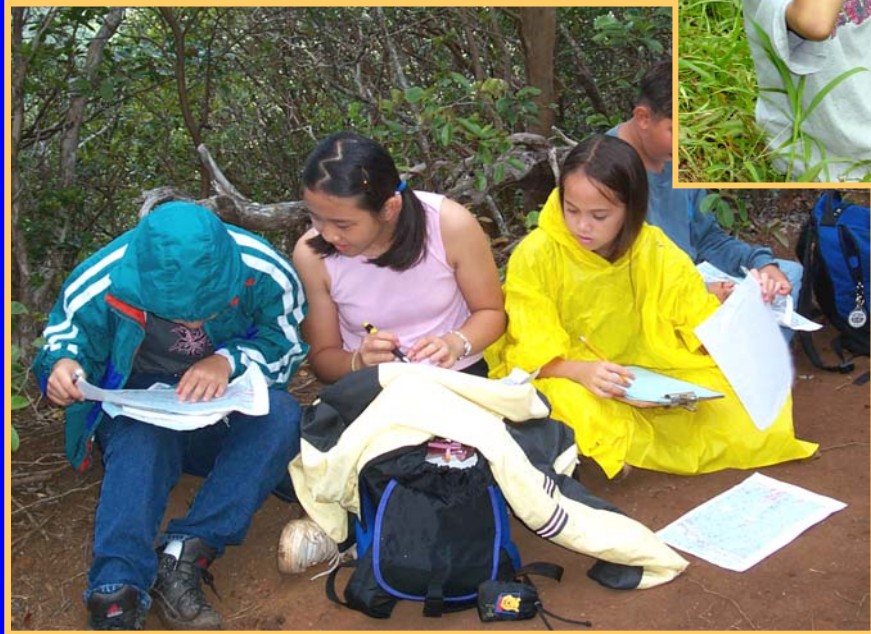
Taxonomy

Morphology

Plant identification

Cartographic skills

Foundational basis of my science knowledge & skills



Establishing a Partnership

- **Teacher submits an application**
- **Scientist matched with teacher based on mutual interests**
- **Initial meeting: review expectations of the scientist and teacher**
- **Outline a project**
- **Collaborate on developing and teaching lessons**



Collaborative Partnership

Scientist: Models Scientific Learning

- Relevant subject matter
- Process of scientific inquiry
- Scientific habits of mind
- Individual research
- Collaborative investigation
- Scientific communication

Teacher: Models Teaching

- Knowledge of students & their learning abilities
- Learning styles
- Teaching technique
- Classroom management
- School culture

What are some Potential Partnership Activities?

- Why?

- Who?

- How?

- **What?**

- Time?

- Where?

Curricular and Student Development

- Develop a science unit or year-long curriculum
- Facilitate inquiry learning by students
- Set up & lead a field trip
- Serve as a science project advisor
- Develop inexpensive lab apparatus or field equipment

What are some Potential Partnership Activities?

- Why?

- Who?

- How?

- **What?**

- Time?

- Where?

Teacher Development

- Provide resources for teachers
- Involve teachers or students in a research project
- Help with a teacher workshop or seminar course
- Train teachers in the appropriate use of scientific technology



Potential Partnership Activities



How much time do I need to commit?

- Why?

- Who?

- How?

- What?

- **Time?**

- Where?

RANGE: One-time visit to year-long interaction
Intermittent or regular interaction

- **Advisory role**

- **Classroom visits**

- **Field trip assistance**

- **Teacher workshop participation**

- **Unit development**

- **Year-long curriculum development**

- **Research participation**

- Why?

- Who?

- How?

- What?

- Time?

- **Where?**



Expected Outcomes: Benefits of a Partnership

- **Improved instruction**
- **Revised curriculum**
- **Changed school culture towards science instruction**
- **Improved student achievement**
- **Increased cooperation among scientists, science educators, and teachers**

